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AN ANALYSIS OF THE
STATE OF TOTAL QUALITY
IN ACADEMIA

by

Robert L. Henderson

December, 1991

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Implementation of total quality in an academic environment requires major organizational changes predicated on a new paradigm directed at continuous process improvement. The principles of total quality can be successfully applied in academic institutions. Implementation in any organization can be a difficult process, subject to a number of risks and external constraints. Academe is not fundametnally different from industry with regard to implementation of total quality.

This study identifies 126 institutions of higher education actively applying total quality. Telephone interviews were conducted with representatives of 192 post-secondary educational institutions. In depth personal interviews with representatives of nine academic institutions that are currently applying the principles of total quality to internal processes were also conducted. These contacts provided the foundations

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An Analysis of the State of Total Quality in Academia

by

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Submitted in partial fulfillment
of the requirements for the degree of

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ABSTRACT

Implementation of total quality in an academic environment requires major organizational changes predicated on a new paradigm directed at continuous process improvement. The principles of total quality can be successfully applied in academic institutions. Implementation in any organization can be a difficult process, subject to a number of risks and external constraints. Academe is not fundamentally different from industry with regard to implementation of total quality.

This study identifies 126 institutions of higher education actively applying total quality. Telephone interviews were conducted with representatives of 192 post-secondary educational institutions. In depth personal interviews with representatives of nine academic institutions that are currently applying the principles of total quality to internal processes were also conducted. These contacts provided the foundations for an examination of the state of total quality in academia. Roles of leadership, implementation strategies, organizational structure, and management systems are explored. Measurement, outcomes and results of the quality effort are also investigated.

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I. INTRODUCTION

"Quality Control begins with education and ends with education" Karou Ishikawa [Ishikawa, 1985]

A. BACKGROUND

1. The Quality Revolution

There is a quality revolution sweeping across America today. Industry, business and most recently educational and government institutions are engaging in a quality transformation. The quality revolution is based upon the principles of total quality management. Corporate giants such as IBM, Xerox, Ford, Proctor and Gamble and a multitude of others have joined the quality movement. Education and government have witnessed the transformation in business and are beginning to participate.

The quality revolution is a thought revolution in management. It requires new knowledge, new ways of viewing the organization and its environment, and fundamental changes in management methodology. It is also a cultural revolution, the magnitude of which has been compared to that of the industrial revolution. [Ishikawa, 1985, Deming, 1982] Dramatic changes are occurring in Business, industry, government and academe as organizations adopt and apply the principles of total quality.

Management is acquiring new knowledge and skills and shifting emphasis to issues of quality.

Total quality refers to a philosophy of continuous improvement and is known by many different names including Total Quality Management, Continuous Improvement Process and Company Wide Quality Control. Total Quality should not be confused with traditional quality control where the quality department is responsible for inspecting quality into a product. Instead, total quality consists of philosophy coupled with theory, methods and tools which are used to facilitate the continuous improvement of processes and products. Total quality requires a fundamental shift from focus on outcomes to a focus on processes and process improvement which can lead to organizational success.

The underlying principles of total quality are not new. Based upon the work of Shewhart and Deming in the 1930's and 1940's, they flourished for a brief period, but were all but forgotten following world War II. [Walton, 1986, Ishikawa, 1985]

The 1980's saw a renaissance of the quality movement in America. Industry was suffering from competitive pressures from abroad and sought new ways to regain both market share and competitive position. The reawakening was largely a result of a 1980 television documentary featuring W. Edwards Deming, "If Japan can ... Why can't we?" [Walton,1986]

The quality revolution in America began in business and industry, largely as a response to competitive pressures. The revolution has been extended to education and government. Educational institutions and government organizations have witnessed the changes in business and industry and many have embraced the philosophy. President George Bush stated in "America 2000: An Education Strategy",

> "... To those who want to see real improvement in education, I say: There will be no renaissance without revolution." [Bemowski, 1991]

Today, at least 126 post secondary educational institutions have adopted the principles of total quality and are identified in this study. The remainder of this chapter will discuss a few of the many reasons for the shift to total quality in academe, and Department of Defense and United States Navy involvement in the quality revolution. The final sections present the research questions to be addressed, followed by the scope, limitations and assumptions which form the foundations for this study.

2. Impetus for Change

Total Quality Management provides the philosophy, methods and tools to facilitate continuous improvement. The methods have been proven effective in industry and promise to be effective in education. Total Quality provides a comprehensive methodology to improve organizational processes

in the current environment and to prepare for the environment of the future.

a. Educational Criticism

America currently has one of the best and most advanced systems of higher education in the world. The educaticnal system and it's institutions have served this nation well. However, the ivory towers of education have recently received considerable criticism from many sources. The quality of education in the United States is perceived to be declining. The public high school drop-out rate averages approximately 25% for the country but is as high as 50% in some areas. Student test scores rank poorly when compared to those of other nations (15th to 17th in science and math, 13th across 13 nations in 12th grade average achievement scores) [Ritter, 1991, Bemowski 1991]. Post secondary educational institutions are under pressure to increase value added in order to graduate students of the same caliber as in the past. Colleges and Universities are finding that more emphasis on remedial education is required for students entering their institutions.

b. Business and Industry Pressure

In the quest for continuous improvement, business and industry have turned to academe for education and training in total quality. Many educational institutions found that they were ill equipped to teach the new philosophy and methods

to industry. A consensus is building in business and academe in which students should receive education in basic quality management techniques and be "quality ready" upon graduation [Cal Poly, 1991].

Evidence also shows that institutions of higher education are not graduating students with the skills required for the realities of the global marketplace [Ritter, 1991]. Many companies have resorted to re-training their own personnel. Some complain that they have to "rework " their employees and provide education that should have been provided in the schools. [Schmidt, 1991, Bemowski 1991, Cal Poly, 1991]

Business and industry have become involved in the quality efforts of educational institutions. A number of companies have demonstrated support by providing funds to schools that are implementing total quality. IBM, Motorola, General Electric, and Proctor and Gamble have developed programs to assist schools with implementation. A multitude of others have provided training, consulting and other forms of direct assistance to educational institutions. [Kloppenborg, 1991, Haddad, 1991]

c. Institutional Impetus

State University systems have also become involved in the quality movement. The University of North Dakota System and University of Wisconsin System have developed guidance for implementation of total quality in schools under

their jurisdiction. [North Dakota, 1991, Carlson, 1991] The Minnesota Board of Technical Colleges is applying the principles of total quality internally and provides training and assistance to 34 campuses in their system. These schools are encouraged to participate on a voluntary basis. [Meuniers, 1991]

In addition to these systems, accrediting bodies have become involved in the quality movement. The American Association of Collegiate Schools of Business recently changed their accreditation standards reflecting a greater emphasis on quality [AACSB Newsletter, 1991, AACSB, 1991, Evans, 1991]. The Southern Association of Colleges and Schools also changed their rules and regulations for accreditation, focusing on institutional effectiveness, excellence and measurement, which is consistent with the total quality methodology [Mahoney, 1991]. Each of these systems and accrediting bodies are beginning to shift priorities toward a greater emphasis on quality. Such efforts are providing an impetus for educational organizations to adopt the methods of total quality.

d. Constrained Resources

Educational budgets are declining in the 1990's. Federal funds have been cut and states have attempted to fill the gap. However, state budgets are also constrained. Last year, 35 states reduced their budgets for higher education.

Many institutions are finding that they must do more with less [Maryland, 1991]. However, tuition costs have increased sharply in the last decade, increasing at a rate faster than inflation. Elaine El Khawas, American Council on Education, states,

> "In four or five years, tuition in many state schools could double." [Quinn, 1991]

According to Warren Neel, Dean, University of Tennessee College of Business,

> "In the environment of the nineties, we cannot pass along tuition increases to the students, we cannot continue to operate, completely isolated and insulated." [Neel, 1991]

e. Competition

Demographic changes have reduced enrollment and have heightened competition between post secondary institutions for the declining pool of new students. Even the most prestigious universities have seen the number of qualified applicants decrease. Many schools have considered reducing standards to maintain enrollments. [Mayhew, et al., 1990]

It has been suggested that educational institutions are currently in the same competitive position as American industry was twenty years ago. Progressive institutions looking into the future will not wish to follow the same competitive trend as american industry. Market share is now threatened. Reduced enrollments make institutions more

reliant on non-traditional and foreign students. One prognostication sees foreign institutions taking away market share, and more American students attending post secondary institutions abroad [Ritter, 1991, Bemowski 1991]. [Mayhew, et al., 1990]

The American educational system has served this nation remarkably well. It is the long term element in this nation's success. Our systems of education, government and industry have made unprecedented, dramatic advances. No other country in the history of mankind has had such a remarkable impact on the world in which we live. However, the current global environment shows that our successes are rapidly being eclipsed by those of other nations. The paradox is that we are moving forward but the pace of others surpasses our own. Therefore we are falling behind. [Guzzi, 1991]

In summary, the environment is rapidly changing. Educational institutions are under increasing pressure to change the way that they do business. The transformation must originate in academe to be effective. If educational institutions don't make the necessary changes, competitive forces or external constituencies may force them. The time is ripe for a major transformation in education. In the words of William Trout, President of Belmont University, "The wolf is at the door" [Hillenmire, 1991].

3. Department of Defense

The Department of Defense has been actively involved in the quality revolution for a number of years. While DoD organizations are not subject to the same competitive pressures of business and industry, defense budgets have recently been shrinking in real terms and there is considerable pressure to use available funds more efficiently and effectively. In 1988, the Secretary of Defense, Frank Carlucci, published a memorandum calling for adoption of Total Quality Management (TQM)[1] within the Department of Defense [Carlucci, 1988]. As a result, many organizations within the Department of Defense have implemented total quality.

a. Department of the Navy

The Navy has also become involved in the quality revolution. In 1987, the Secretary of the Navy, Chief of Naval Operations and Commandant of the Marine Corps signed the "DON Productivity Guiding Principles", providing the initial thrust for quality improvement within the Department of the Navy. [Garrett, 1990] In May of 1991, this action was followed up by a message from the Chief of Naval Operations, Admiral Trost. This message calls for Navy- wide implementation of Total Quality Leadership. [Kelso, 1991]

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[1]TQM was originally used within the Department of the Navy in 1985 to describe a management technology based largely on the teachings of W. Edwards Deming. [Doherty, 1991]

Implementation requires education and training in the philosophy, methods and tools of total quality. As implementation progresses, Naval educational institutions will be called upon to provide the required education. Involvement will require more than simply teaching the new methods. Academic, educational and training units must apply the concepts within their own organizations. They will pioneer implementation, in an environment where application of the principles of total quality is a relatively new undertaking. These organizations must be able to "practice what they teach". Academe within the Navy must go beyond education and implementation. Research and consultation should be used to expand the limits of this rapidly emerging field.

B. OBJECTIVE AND RESEARCH QUESTIONS

This thesis will explore the current state of total quality in higher education. The objective is to analyze organizations that are currently applying the principles of total quality to internal processes in order to determine the nature of applications within academe. This study will be useful to educational institutions which are considering adoption of a total quality approach or which are in the early phases of implementation.

The following research questions will be addressed:

1. **Primary Research Question**

   What is the state of total quality programs in academia?

2. **Secondary Research Questions**

   a. Which post secondary institutions are actively practicing a total quality approach?

   b. What implementation strategies have been successfully used?

   c. Which processes have been targeted for improvement?

   d. What successes have been achieved?

   e. What problems have been encountered?

C. SCOPE, LIMITATIONS AND ASSUMPTIONS

1. Scope

This study examines total quality in higher education. It is not a broad examination of the principles or methods of total quality. It is a preliminary exploratory inquiry on the implementation of total quality in higher education. The study concentrates on post secondary educational institutions in the United States including technical schools, community colleges, universities and graduate institutions.

2. Limitations

This study relies upon six months of extensive research on the principles of total quality philosophy, theory, methods, tools and applications to education. It is

primarily based upon personal interviews of quality personnel at post secondary institutions that have applied the concepts of total quality to internal processes. Site visits and in depth personal interviews were conducted at nine post secondary institutions. Additional information was gathered in over 250 telephone interviews of personnel active in total quality. Representatives from 192 educational institutions were contacted. Appendix A provides a list of organizations contacted.

Research was designed as a preliminary inquiry on the subject of total quality in Academia. The thesis does not attempt or claim to develop statistically valid conclusions. The subjects for the research were selected from a population that showed interest in total quality though participation in seminars and via referral by representatives of other institutions. Additionally, all data was self reported by the subjects with attempted validation of responses by the author. While this study is preliminary, this work should provide the foundations for further inquiry and research in the field.

3. Assumptions

The thesis is based on the assumption that the reader is knowledgeable in the general principles of total quality. For the reader without such a background, the List of References provides an excellent source of information on the general topic.

The goal of this study is to provide information useful to an educational organization that wishes to implement a total quality approach or is in the early stages of implementation.

4. Overview

Chapter II will present the methodology which form the foundations of this study. It describes the five phases of research pursued on the topic: literature review, identification of institutions of higher education that are practicing total quality, selection of institutions for site visits and further study, data collection at those institutions and analysis as reported in this thesis.

Chapter III contains a compilation of in depth interview responses from seven institutions that are actively pursuing a total quality approach. The responses were collected in site visits at the institutions studied. This chapter compiles the "raw data" resulting from the interviews. Chapter III should not be broadly interpreted without the benefit of the analysis in Chapter IV.

Chapter IV presents an analysis and elaboration upon the responses presented in Chapter III. Since the data collection phase used a free form interview process, the responses in Chapter III do not adequately describe the quality efforts at the institutions studied.

Chapter V contains conclusions and recommendations based on the in-depth interviews, telephone interviews with personnel in other institutions that are implementing total quality and current literature. Chapter V also answers the research questions presented in Chapter I and presents recommendations for future research in the field of total quality and total quality in academe.

II. METHODOLOGY

This chapter presents a summary of the research methodology which provides the framework for this study. The methodology involved five distinct and often concurrent phases: 1) Literature Review, 2) Identification, 3) Selection, 4) Data Collection and 5) Analysis. Each phase will be discussed in depth.

A. LITERATURE REVIEW

An extensive review of current literature was conducted for information on total quality and quality in education. Additional information was collected on the topics of total quality philosophy, methods, tools and audits. A broad spectrum of information from a variety of sources was collected.

Research began with a search of the Naval Postgraduate School library using the NPS on-line catalog. Guides to periodical literature were consulted for current articles on quality in education. The Defense Technical Information Center (DTIC) and SABRES databases were also used.

In addition to the traditional literature search, a number of organizations were contacted for information on the topic of total quality in higher education. Representatives from

organizations involved in total quality, professional organizations, and individual schools were solicited for information. The following organizations were contacted:

- American Association for Higher Education
- American Assembly of Collegiate Schools of Business (AACSB)
- American Productivity and Quality Center
- American Society for Engineering Education
- American Society for Quality Control (ASQC)
- Federal Quality Institute
- Growth Opportunity Alliance of Greater Lawrence (GOAL)
- Minnesota Board of Technical Colleges
- National Academy of Sciences
- National Academy of Fngineering
- National Association of Schools of Public Administration
- National Educational Quality Initiative Inc.
- North Dakota University System
- Philadelphia Area Council for Excellence (PACE)
- United States Department of Commerce, National Institute of Standards and Technology (Malcom Baldridge National Quality Award)
- United States Department of Education

Individual post secondary educational institutions were also contacted and many provided information. A list of institutions contacted is provided in Appendix A.

B. IDENTIFICATION

The first phase of primary research was designed to identify post secondary institutions that are actively practicing total quality internally. This criterion is defined as those organizations that are applying the philosophy, methods and tools of total quality to internal processes. For the purposes of this study, organizations that are only teaching courses in total qualit. .re not considered to be applying total quality concepts internally.

A total of 192 post secondary institutions were contacted via telephone to identify those that are actively practicing total quality. The telephone contacts were conducted over the period of September 15 to November 15, 1991. A discussion guide was used for identification of practicing institutions during telephone contacts. The guide contains supplementary questions to determine the nature of an organizations involvement and validate participation. The discussion guide served as a tool to determine if organizations could not only "talk the talk," but also substantiate their involvement in application of total quality and, "walk the walk".

Approximately 30% of those contacted answered all of the questions in the discussion guide. Individuals were encouraged to freely discuss the nature of their involvement in total quality. Responses were permitted to free flow to ensure totality and quality of response. Representatives that reported the organization was not pursuing total quality were

not questioned further. Approximately 95% of the respondents pursuing total quality answered the last questions in the discussion guide including: number of years of involvement, where applications were being pursued (Administrative, Academic) and who was involved in the process (Students, Faculty, Staff). A complete copy of the telephone discussion guide is presented in Appendix B.

1. Subjects

The population targeted in the identification phase was selected from lists of participants in total quality in education seminars, references in periodical literature and via referral by educators and administrators. Each of the representatives and institutions contacted had displayed interest in total quality in education.

The individuals contacted in this study are associated with post secondary educational institutions and involved in the quality effort. Individuals contacted include Presidents, Provosts, Deans, Administrators, Faculty and Quality Coordinators.

C. SELECTION

Individual schools were selected for further study based upon the information collected in the identification phase. Selection were based on three criteria: Achievement of tangible measures of success in implementation of total quality, total quality was being used to improve academic

processes, a site visit and personal interviews could be scheduled. A diverse cross section of public, private, technical, two year, four year and graduate schools, with quality efforts in various stages of development were selected for further study. A total of nine institutions were selected.

This study was conducted by a single researcher over a six month period. Time and financial resource constraints limited the number of schools selected for in-depth study. Therefore, at least 20 schools with well developed and unique quality efforts met the selection criteria and were considered candidates but were not examined in depth. (See Appendix C).

D. DATA COLLECTION

Following selection, additional research was conducted during site interviews with personnel at individual institutions. Since this was a preliminary inquiry, it was felt that personal interviews would provide: more reliable results, greater depth, and richer information than a survey. The following organizations were visited between September 23 and October 29, 1991:

- Belmont University, Nashville, TN
- Defense Systems Management College, Fort Belvoir, VA
- Fordham University, School of Business, New York, NY
- Fox Valley Technical Institute, Appleton WI
- Northwest Missouri State University, Maryville, MO

- University of Chicago, Graduate School of Business, Chicago IL
- University of Pennsylvania, Philadelphia, PA
- University of Tennessee, College of Business, Knoxville, TN

It was not possible to schedule a visit to Delaware County Community College. Therefore, an in depth telephone interview was conducted.

1. Subjects

The subjects of the data collection phase included Presidents, Deans, Quality Coordinators, Faculty and Staff at the institutions visited.

2. Discussion Guide

In the data collection phase, a discussion guide was used by the researcher. The guide was designed to provide the framework for data collection. Interviews were permitted to flow, free form, while the guide was consulted to direct the line of questioning. The guide was not designed as a survey. A complete discussion guide used in the interviews is contained in Appendix D. Seven of the nine schools were selected for in-depth interviews answered 100% of the questions contained in the discussion guide[2]. A summary of

[2]Interviews with personnel at the University of Tennessee and the University of Pennsylvania did not address all of the questions contained in the discussion guide. Their responses are not included in Chapters III or IV.

responses is contained in Chapter III, followed by an analysis of responses in Chapter IV.

E. ANALYSIS

This thesis presents the results of an analysis based on the foregoing methodology. The data collected from this research is summarized in Chapter III. Chapter IV presents an analysis of the data and Chapter V contains conclusions and recommendations.

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are not included in Chapters III or IV.

III. INTERVIEW RESPONSES

A. INTERVIEW RESPONDENTS

This chapter contains a compilation of interview responses from seven institutions currently applying the principles of total quality internally. Site visits and personal interviews were conducted with representatives of each of the following institutions:

- Belmont University, Nashville TN (B)
- Defense Systems Management College, Fort Belvoir VA (D)
- Delaware County Community College, Media PA (DC)
- Fordham University, School of Business, New York NY (F)
- Fox Valley Technical College, Appleton WI (FV)
- Northwest Missouri State University, Maryville MO (N)
- University of Chicago, Graduate School of Business, Chicago, IL (C)

B. COMPILATION OF RESPONSES

Respondents were asked a series of questions using the discussion guide shown in Appendix D. Interviews were taped at each institution and later transcribed. The responses were then summarized and compiled manually. Reasonable license was taken in categorizing similar responses when compiling responses for this chapter. For example, when considering the question of why the organization is pursuing total quality, a

response such as "better utilization of resources" would be classified as "efficiency".

The discussion guide was designed and used for structured and unstructured responses. The questions were designed to capture objective and subjective responses and personal opinions. Since many of the questions permitted multiple responses, the total number of responses for a given question may total more than seven. The data in this chapter is a synopsis of abridged responses for purposes of comparison. The data presented in this chapter should not be broadly interpreted without the benefit of the analysis in Chapter IV. Chapter IV contains an analysis and further elaborates on the questions and topics covered here in order to capture the depth and breadth of interview findings. The reader may prefer to skip to Chapter IV, referring to this chapter for summary data.

C. SUMMARY OF RESPONSES

General Information

1. Type of Institution

The sample consisted of two graduate schools of business, two universities, one community college, one technical college and one military college. The sample contained four public, two private and one federal government institution.

2. Organization Size

Name	Faculty	Students
Belmont	400	3000
Chicago	~145	1100 regular 1200 evening 360 weekend & executive
Defense Systems Management College (DSMC)	150	1500/yr 4-5000 short course
Delaware	120 full time 300 part time	9500 credit students
Fordham	80	1900
Fox Valley	250 1000-1200 Adjunct	5000 full time 50,000 took at least 1 class
Northwest	230	6000

3. How long has the organization been practicing Total Quality?

Average number of years	4.07
Range	2-5 years

4. What name is used to describe the quality effort?

Total Quality	2	(C, DC)
Covenant for Quality	1	(B)
Culture of Quality	1	(N)
Operations Improvement	1	(D)
Total Quality Management	1	(F)
Quality Improvement Process	1	(FV)

5. What is your definition of quality?

Conformance to customer requirements (FV)

Meeting or exceeding customer needs, on time, within cost (DC)

Making Belmont better than Belmont (B)

Unified agreed upon set of outcomes based upon the customer and organizational value structure (N)

Consistent conformance to customer standards (D

Exceeding customer expectations (C)

There are various levels of quality, each is focused on the customer (F)

6. Does the organization follow the philosophy of any particular individual?

Primarily Deming	5	(DC, B, N, D, F)
Primarily Crosby	1	(FV)
Homegrown	1	(C)

All seven schools reported using a combination of philosophies which are tailored to the needs of the organization. Other philosophical influences mentioned include Juran, Albrecht, Feigenbaum, Imai, Peters, and Cloring (MIT).

Motivation

1. Why did the organization adopt a total quality approach?

a. Reactionary,[3] response to environment	0	
b. Anticipatory[4]	4	(FV, B, NW, F)
c. Combination	3	(DC, D, C)

2. Was there a critical event necessitating the change?

Yes	0	
No	6	
Yes and no	1	(C)

3. Why is the organization pursuing Total Quality? What are the goals? What goals will total quality help you to achieve?

Customer satisfaction	4	(C, D, DC, FV)
Efficiency	4	(C, D, F, FV)
Quality of work	3	(C, DC, FV)
Effectiveness	3	(C, D, FV)
Economic Payoff	2	(B, FV)
Enhanced Competitiveness	2	(C, F)
Quality of product	2	(C, F)
Image/reputation	1	(C)

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[3]Quality effort pursued as a response or reaction to an event in the current environment.

[4]Quality effort pursued in response to perceived future environment.

Improved student profile	1	(B)
Improved Religious life	1	(B)
Improve all aspects of organization	1	(C)
Outstanding Faculty	1	(B)
Speed/Responsiveness	1	(C)

Leadership/Personnel

1. Champion(s):

a. Who was/were the Champion(s) for the change to total quality? (The person(s) with the initial vision, not necessarily who is in charge of implementation).

Top Management	6	(B, C, DC, F, FV, N)
President	3	(B, FV, N)
Dean	2	(C, F)
President & Dean	1	(DC)
Top & Middle management	1	(D)
Middle Management	0	
Faculty	0	
Employee	0	

b. What is the role of the champion? Relative involvement?

(See leadership below)

2. Quality Coordinator:

a. Is there a formally appointed Total Quality Coordinator?

Yes 7

b. What is the role of the coordinator?

The following roles were mentioned: Cheerleader, facilitator, change agent, quality council chair.

c. Titles of Quality coordinators:

Quality Coordinator	2	(DC, FV)
VP Quality and Professional Development	1	(B)
Special Assistant for Operations Improvement	1	(D)
Associate Dean	1	(F)
Assistant Dean for Management	1	(C)
Vice President, Academic Affairs	1	(N)

d. Relative involvement of Quality Coordinator?

Full time	3	(B, D, DC)
1/2 time	4	(C, F, FV, N)

3. Top Leadership:

a. What is the role of top leadership in the quality effort?

The following roles of top management were mentioned: champion, cheerleader, role model, motivator and provider of direction and vision.

b. What is the relative involvement and degree of support provided by leadership?

Actively involved	5	(B, D, DC, F, FV)
Involved	2	(C, N)
Committed	5	(B, DC, F, FV, N)
Supportive	7	

c. What level of access is provided by top management in support of the quality effort?

Direct	6	(B, D, DC, F, FV, N)
Via one level	1	(C)

d. Has an organizational quality policy been developed?

Yes	5	(B, DC, D, FV, N)
No	1	(C)
In Process	1	(F)

f. How has the policy been communicated?

Personally by leadership	7	
Vision Statement	3	(B, D, N)
Strategic Plans	3	(FV, DC, N)
Other documents	2	(FV, N)
Mission Statement	2	(F, N)
Five year Plan	1	(F)

4. Executive Council:

a. Has a central quality team (executive council) been formed and if so what is its composition and function?

Yes	7	
Composition:		
Top Management	5	(B, D, DC, F, N)
Vertical Cross Section	4	(C, DC, FV)

Roles include planning, implementation of policy, monitoring, examining results, and providing guidance, feedback and support.

5. Faculty:

a. What is the role of faculty? Relative involvement?

A variety of roles were mentioned including, membership on executive councils, participation on teams, implementation within the classroom and teaching internal and external courses.

b. What is the consensus of the faculty regarding the quality effort?

Positive	6	(B, C, D, F, FV, N)

Specific Responses: (Core is with it, Voted for major in TQM, generally supportive, Supportive and voted for implementation, Generally positive, positive)

Range of Opinion	3	(B, C, D)
Initially Skeptical	2	(DC, FV)

6. Customers:

a. Who are your customers?

Internal

Students	7	
Faculty	5	(B, DC, F, FV, N)
Multiple	3	(C, DC, N)
Staff	2	(B, FV)

External

Industry	5	(B, D, DC, F, FV)
Alumni	3	(B, C, N)
Community	3	(B, DC, FV)
Corp Recruiters	1	(C)
Donors	1	(B)
Other Schools	1	(D)
Parents	1	(N)
Vendors/Suppliers	1	(F)

7. Education/Training:

a. Is there an ongoing education/training program?

Yes	7	

b. Has a formalized training plan been developed?

Yes	6	(B, D, DC, F, FV, N)
No	1	(C)

c. Who has received training?

Top management	7
Staff personnel	7
Faculty	7

d. Who will receive training in the future?

Everyone	7

e. What training methods have been employed?

External schools/courses	6	(C, D, DC, F, FV, N)
Internal schools/courses (external instructors)	2	(C, DC)
Internal schools/courses (internal instructors)	6	(B, D, DC, F, FV, N)

Quality Organization

1. Which of the following areas are currently practicing total quality internally?

Administration	7	
Academic	7	

2. Do you have a quality department or staff?

Yes	2	(B, FV)
Number of personnel	6	Full time (B)
	7	Full time (FV)

3. Has the organizational structure changed as a result of the quality effort?

No change	1	(DC)
Minor changes	3	(B, C, F)
Major changes	3	(D, FV, N)

4. Was it necessary to add positions into the existing structure?

Yes	3	(B, 5; DC, 1; FV, 7)
No	4	(C, D, F, N)

5. Have quality circles or teams been established?

Yes	7

6. What is the role of the teams?

Problem Solving	7	
Process Improvement	3	(B, DC, F)
Training	2	(C, DC)

7. Have any cross functional teams been established?

Yes	7	

8. Is there an established suggestion system?

Yes	3	(C, DC, FV)
No	3	(B, D, N)
Informal	1	(F)

9. Has a recognition/reward system been developed to reinforce the quality effort?

Yes	6	
No	1	(F)

Specific systems:

Presentation of Results to top management	1	(B)
Modified Performance evaluation	4	(C, D, DC, N)
Recognition Awards	1	(FV)
Pay incentives	2	(DC, N)

Implementation/Strategy

1. Was a formal implementation plan used?

Yes	5	(B, C, DC, FV, N)
No	2	(D, F)

2. What was the implementation strategy?

Top Down	5	(B, D, F, FV, N)
Bottom up	0	
Inside out	2	(C, DC)

3. How did the quality effort begin? What is its history, where did it start?

   See Chapter IV.

4. Did the organization attempt pilot projects to show initial success?

Yes	3	(B, D, DC)
No	4	(C, F, FV, N)

5. In what ways did implementation deviate from plans? What was changed from the original plan? Why?

Plans were flexible. Those with a formal plan reported that implementation was proceeding according to plan. However, each thought that the process was slower than anticipated.

6. Was quality effort implemented by

External, consultant	0	
Internal,		
TQ coordinator	2	(C, DC)
Champion	1	(F)
Coordinator and champion	2	(FV, N)
Team approach		
Internal	2	(B, D)
External	0	
Combination	0	

7. What is the relationship of the TQ effort to strategic planning?

Critical, very important (2), Crucial D, DC, FV, N

8. Have the services of an external consultant ever been used? If so, for what purpose?

Yes	6	(B, C, D, DC, F, FV)
Training	6	
No	1	(N)

9. Has the organization adopted the methods or tools or procedures advocated by any particular individual? (Related to earlier question regarding philosophy)

All schools reported using a combination of a variety of tools including seven problem solving tools, seven planning tools, Hoshin planning and Quality Function Deployment (QFD).

10. Resources:

a. How are financial resources obtained?

Formally budgeted	4	(C, DC, FV, N)
Informal, from existing budget	2	(D, F)
External Sources	1	(B)

b. How is time required for quality efforts afforded?

From normal workday	7
After working hours	0

c. Are records kept on the cost of quality?

Yes	2	(DC, FV)
No	5	

d. How do costs compare to benefits?

Favorably	5	(B, DC, F, FV, N)
Difficult to tell	2	(C, D)

11. Difficulties:

a. What difficulties have been encountered?

Communication

Allegiance of Faculty 2

Teams stall

TQ philosophical differences

Thinking it to death

Consumer producer relationship

TQ used as justification for pushing work through

Resistance/opposition

Inconsistencies or contradictions between the current state and "TQ" state.

Personnel changes 3

Faculty resistance

Tendency toward academic discourse, difficulty reaching consensus.

Management received more training than staff

Lack of communication to Faculty

Not always harnessed together as a team

Always have to work on ownership

Desire to jump in, immediate gratification.

b. Are any of these problems unique to education? If so, which ones?

Yes 1 (B)

Tendency toward academic discourse
Allegiance to discipline

No 6 (C, D, DC, F, FV, N)

Success/Measurement

1. How does the organization measure the success or progress of the total quality effort?

Combination, Quantitative and Qualitative	7	

2. How is customer feedback obtained and measured?

Surveys/Questionnaires	7	
Meetings with customers	3	(B, D, N)
Customers are part of quality teams	2	(C, N)
Suggestion System	1	(C)

a. Specific Types of Feedback:

<u>Internal</u>

Unstructured student survey (Likes/dislikes)	1	(B)
Personal interviews (Students)	1	(B)
Student exit surveys	1	(C)
Survey of students	2	(C, D, DC, N)
Course questionnaires	2	(D, F)
Organizational climate survey	1	(F, FV)
Staff surveys	1	(D)

External

Alumni survey	2	(C, FV, N)
Recruiter evaluation	1	(C)
Students admitted but chose to attend another institution	1	(C)
Dialogue with external customer (mkt research)	1	(D, FV)
Regional high school survey	1	(FV)
Area resident perception survey	1	(FV)

3. What type of results (improvements) have been achieved? (Have any of the goals of the quality effort as discussed previously been achieved?)

Customer satisfaction	5	(C, D, DC, F, N)
Improved morale	4	(B, C, DC, FV)
Efficiency	3	(D DC, N)
Speed/Responsiveness	3	(D, DC, FV)
Quality of product	3	(D, DC, F)
Economic payoff	3	(DC, N)
Quality of work	2	(D, FV)
Image or reputation	1	(C)

4. How has implementation progressed?

Fits and starts	5	(B, D, DC, F, N)
Growing and building	1	(FV)
Gradual, steady	1	(C)
In phases based on critical events or strategic plans	0	

5. Will the organization reach a point where TQ is institutionalized and self sustaining?

Yes	5	(B, C, D, DC, FV)
No	1	(N)
Depends	1	(F)

6. Is there a finite point in time where the organization has achieved total quality?

Yes	0
No	7

7. When can the effort be stopped, when are you finished?

Never	7

8. Is the (1) Quality Coordinator, (2) Quality department, a permanent part of the organization or will the organization reach a point where those services are no longer required?

(1) Quality Coordinator

Yes	1	(C)
No	6	(B, D, DC, F, FV, N)

(2) Quality Department

Yes	0	
No	2	(B, FV)

9. Describe the five most significant improvements that have been achieved. The following processes have been improved:

Course Scheduling	(DC, F, FV, N)
Centralized Student Svcs	(FV, N)

Xerographic copying	(C, DC)
Course materials preparation	(C)
Faculty lab course	(C)
Work scheduling	(D)
Change from 3/4 to 1/2 video	(D)
Print shop performance	(D)
Travel request processing	(D)
Mail processing	(DC)
Purchasing streamlined	(DC)
Recruiting	(F)
Research and Publication	(F)
Freq and format of management meetings	(FV)
Facilities improved	(FV)
Budgeting	(DC)
Applications turnaround	(B)
Telephone call routing	(B)
Payroll	(B)

10. When implementing total quality, what is unique about education? What are the constraints on total quality in education? How are they different from other organizations?

No Difference	4	(D, F, FV, N)
Differences	3	(B, DC, C)

Differences noted:

Development of a human being is a lot different than manufacturing a product.

Wide variety of customer groups, no single customer

Motivations are different

There is no bottom line

Process is invisible

Personnel not trained in systematic thinking

11. What advice would you give to an organization embarking on implementation of a TQ effort?

Belmont:

1. Learn everything you possibly can about your customers.
2. Double the time you think it will take.
3. Enjoy the ride, new learning is exciting. [Hillenmire, 1991]

Chicago:

1. Get top leadership involved as soon as you can.
2. Clarify what the mission of the organization is.
3. Start small. Don't try to do everything at once. Try a couple of projects to see what works and what doesn't.
4. Be prepared to accept some failure.
5. There is a tendency to try and study this stuff to death. Give some training and get started, try it. [Kooser, 1991]

DSMC:

1. Leadership must be committed.
2. Leader needs someone who knows and understands what TQ is about, must attach that person to himself.
3. Always keep accountability and responsibility for quality with top leadership.
4. Under no circumstances assign the quality coordinator to a position lower than president or vice president.

[Robinson, 1991]

Delaware County:

1. Involvement from the top, the top has to walk the talk. That doesn't come naturally, they have to learn it.
2. Integrate Total Quality with strategic planning earlier rather than later.
3. Focus on administrative fundamentals early in the game.
4. Be sure you have a staff person whose focus is quality, not responsible for quality.

[Stass, 1991]

Fordham University:

1. Study the theory. Understand it, internalize it. decide if you buy off on it, then proceed.

2. Begin figuring out what the organization is all about, what the purpose is. This requires a lot of discussion at the highest levels of the organization and may take as long as a year. What does the organization stand for? What is its mission?

   a. Once that happens at the top levels, works much better, more rapid, more uniform.

   b. Without this, process improvements won't work too well, data collection will fail. Process will be driven by fear.

3. The effort must be driven by the top <u>with understanding.</u> The top personifies the change. This boils down to <u>leadership</u>.

   [Orsini, 1991]

Fox Valley:

1. Be patient and avoid being over critical. When implementing it is easier to criticize another's process and harder to look at your own. The beginning of the effort will bring a lot of criticism. Don't allow it to get destructive.
2. Need to think through clearly what we want from the quality effort. Establish a clear understanding up front of what you hope to accomplish. What are the outcomes? What do you hope to accomplish? Use these criteria to judge progress of quality effort later.

3. Plug the tools and strategies when needed. Don't add to confusion by providing tools too soon, before they are needed.
4. Don't be afraid to use outside help, but use good outside help.

[Zilinsky, 1991]

Northwest Missouri:

1. The Key is top level support.
2. Need high expectations, without it you get mediocrity.
3. Need involvement, need to involve people.
4. Front office should teach themselves first. Hold off on employees. "Work quietly for a long period," to develop the required commitment.
5. Define for yourselves:
   a. What is TQM
   b. Who is your customer
   c. What is your value structure
6. When ready to launch, launch from the top.

[Barnes, 1991]

IV. ANALYSIS

Chapter III presented interview responses from seven institutions o higher education. The responses provide valuable insight into the nature of total quality in academia. However, they fail to capture the depth and breadth of information acquired in the interviews. This chapter provides further elaboration on the interview responses and presents an analysis of the nature of total quality in academe based upon information obtained from schools which are actively practicing.

A. PHILOSOPHY

Each of the organizations studied in Chapter III are implementing total quality based on a combination of philosophies. They are not singularly applying the philosophy or methodologies of any given expert. All seven institutions are using a primary philosophy or model, combined with elements of other philosophies, tailored to the needs of the organization. The primary philosophy is independent but not mutually exclusive. For example, an organization may primarily rely on the philosophy of Deming, but recognize Hoshin planning as a valuable tool and incorporate that into

their quality process. They see value in other works and incorporate those that are synergistic.

There are common elements of quality professed by the quality experts. Appendix E provides a listing of the common elements of quality based upon the works of quality experts. The philosophical foundation(s) selected influence the organizational definitions of quality and the definition of customer.

1. The Many Dimensions of Quality

One of the first challenges of implementing total quality management is to develop an organizational definition of quality. The definition must be specific enough to be widely understood, accepted and acted upon, but broad enough that it covers the spectrum of organizational endeavor. Arriving at such a definition is not a simple task. However, this is precisely the type of difficult question that must be answered to have a successful quality effort. Management cannot launch a quality effort if they haven't defined what quality is.

All of the quality experts advance different definitions of quality (See Appendix F). Without exception, the organizations studied have developed their own unique definitions of quality. Although there are various definitions, all have a common component. That commonality is emphasis on the customer.

The definitions of six of the schools interviewed contain the word, "customer". Although the seventh's does not, the focus on the customer is central to that institution's quality effort. The organizations studied maintain unique definitions of quality based upon not only the philosophical influences of the quality experts but also on the unique realities of each organization. This ensures that the definition will be clearly understood and have meaning to all members of the organization.

The concept of quality is multidimensional. The definition of quality is dependent upon the context in which it is used and the perspective from which it is viewed. There is no single universal definition of quality. There are no static, acceptable norms of quality in academe. "Quality is a receding horizon." [Mayhew, et al, 1990] What can be considered as quality in the classroom is very different from quality in admissions. This ambiguity is largely resolved by defining quality in terms of the customer.

2. Customer Defined

The information presented in Chapter III shows that organizations represented recognize multiple internal and external customers. The concept of the customer is somewhat foreign to educational institutions as academe is not traditionally considered a business. Some schools refer to

customers as stakeholders or constituents. One concept of customer is illustrated in the following figure.

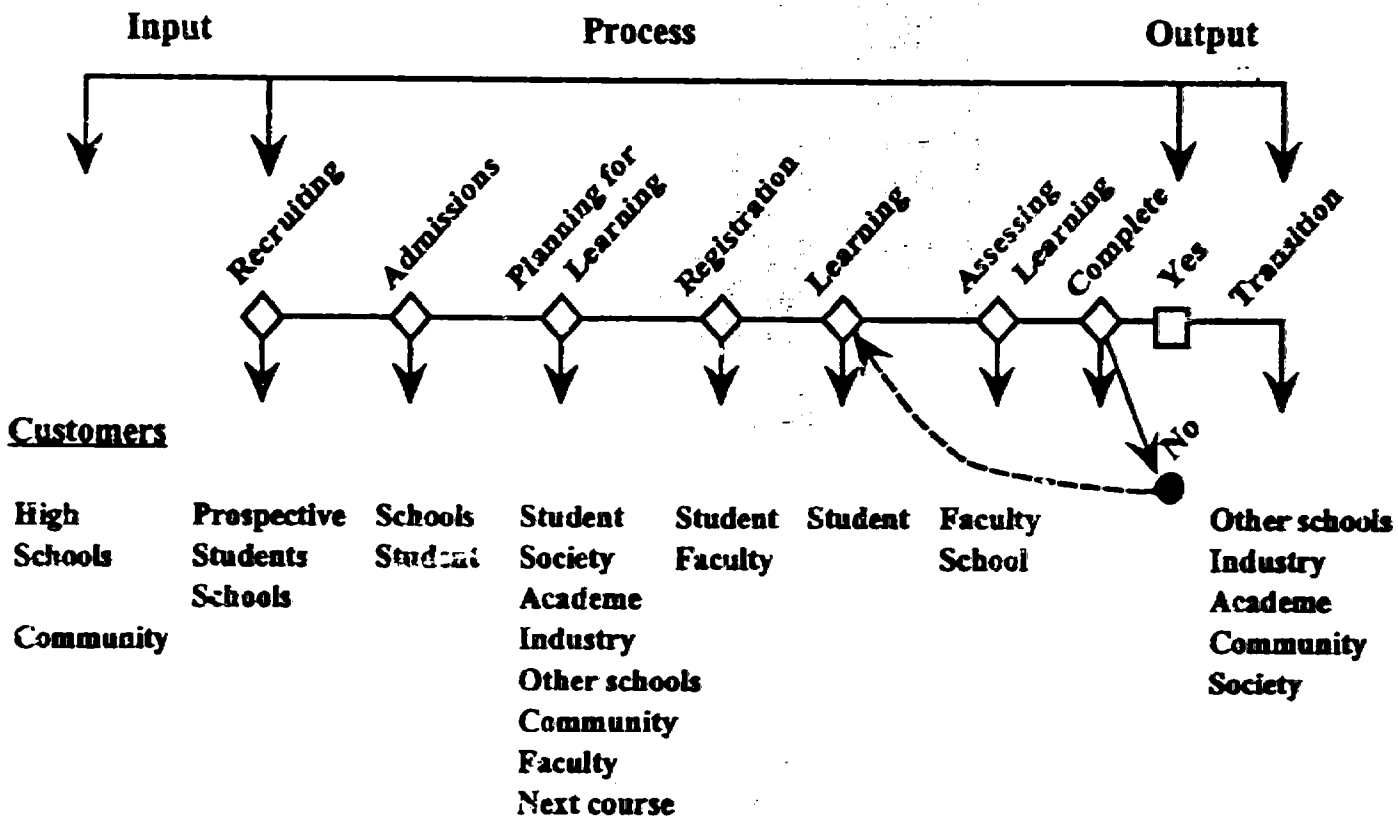

Fig. 4.1 Education as a process and customer base.

This figure was inspired by the Belmont University model of their core process. [Hillenmire, 1991] There are undoubtedly many other possible process models, unique to every institution. Within each of these processes there are sub-processes. In the process model, the customer is defined as the next person in the process. For example, the student is the customer of the faculty in the classroom, the faculty member is the customer of the registrar for schedules, and the registrar is the customer of admissions. There are various levels of customers as well as multiple internal and external customers. Each organization, process, subprocess or unit must define its own customer base.

B. MOTIVATION

The initial impetus for the adoption of total quality in the schools studied was provided by top leadership. Four schools indicated that the motivation for adoption of total quality was anticipatory in the sense that it was adopted in response to the perceived future environment. The other three schools reported that the motivation was combination of anticipatory and reactionary responses, where reactionary is defined as a response to the current environment. Only one of the organizations interviewed specifically mentioned an external environmental influence as a factor in the decision to adopt total quality. In all of these institutions, the decision to adopt total quality as a management method or

strategy was a deliberate choice and not forced by conditions in the immediate environment. At three of the schools studied, it was mentioned that an environmental imperative or crisis may have made the effort easier and might have accelerated the change process.

Although it is true that quality efforts can have short term beneficial effects, implementation of a total quality approach takes time. The effort is not pursued as a quick fix. Real and lasting benefits are not achieved overnight. These schools are adopting a strategy with a long term perspective. This is illustrated by the responses given by all of the schools, the quality effort cannot be stopped and there is not a point in time when total quality has been achieved. Total quality is an on-going, never ending process of improvement.

C. LEADERSHIP

At six of the schools studied, the top leadership of the organization are the champions of total quality. The role of champion is synonymous with the title of President or Dean. These titles are also synonymous with leadership. At every school, top leadership is supportive of the quality effort.

It is difficult to precisely determine the degree of support provided by top management based upon the interviews. However, personal interviews conducted with Presidents at two of the institutions sheds some light on the degree of support

required. At these schools, top management is personally, actively involved and committed to the quality effort. Before they could set a course for quality for the organization, they had to change themselves. They changed their management style, the way that they viewed the organization and how they viewed management processes. They personally had to change the way they did business and had to shed an autocratic style that they had grown accustomed to using. They now lead by example. They personify the change, and let it be known through both symbolic and substantive action (not administrative directives) that the quality effort is a top priority for both themselves and the organization. For example, both of these presidents teach courses in quality, participate in team activities, and take an active interest in individual projects.

Each of the schools studied has achieved some success in implementation of total quality. Leadership was a critical element in the success of these quality efforts. Leadership proceeded with vision, foresight and knowledge. They adopted and attempted to apply total quality in an environment where it had never been attempted before. Only now is that vision coming to fruition and beginning to produce results.

D. STRUCTURE

1. Quality Organization

In this study, an attempt was made to determine the type of structure required to support the quality effort. The following structural components were mentioned and are nearly universal: Quality Coordinator, central team(s) or executive councils, cross functional and work unit teams. In this section, composition, roles and functions of these components will be discussed.

a. Quality Coordinator

Each of the schools visited have a formally appointed Quality coordinator. The role of the coordinator is to support and facilitate the quality effort. Quality is everyone's job. Therefore, responsibility for quality cannot be delegated to the Quality Coordinator. The coordinator is a central position within the organization. The position provides a point of contact for matters concerning quality.

The coordinator generally occupies a staff position placed high within the organizational hierarchy. As mentioned in the previous chapter, the coordinator carries titles such as Vice President and Associate Dean. This position provides visible evidence that top leadership supports the total quality effort and views it as a high priority.

b. Executive Council

Six of the seven organizations studied have established one or more central quality councils or teams to support the quality effort. At five of the institutions interviewed, membership on these teams include personnel from horizontal cross sections high within the organizational hierarchy. At three schools membership consists of personnel representing a vertical or diagonal cross section of the organization (one school has two central teams, one of each type). These central councils or teams are involved in planning, serve as a reporting link and facilitate and approve quality activities.

In addition to the coordinator and central quality teams, three of the schools have established a separate quality units within the organization. These units are very different than a traditional quality department in the business sector, whose function is inspection and responsibility for quality. The units provide support for quality teams, internal training and/or external training and services. At one school, a separate group has been established to provide quality support and training to the local community. At the other two, this group provides external training, support and consultation, and also provides these services internally.

2. Quality Teams

Teams are a central component of the quality effort at all seven of the organizations studied. Teams are organized for problem solving and process improvement. At two of the institutions studied, teams also serve as a training forum. Additionally, all of the schools have established cross functional and work unit teams.

a. Problem Solving/Process Improvement Teams

There are subtle but distinct differences between problem solving and process improvement teams [Atherton, 1991]. The difference is their function. Problem solving teams select a recognizable problem and apply the tools of total quality to correct it. Once the problem is "corrected", the team selects a new problem or is disbanded. Problem solving teams can be very effective as a motivational vehicle. The effects of a team's work is immediate, tangible and can have direct effects on those that are affected by a problem.

In contrast, process improvement teams select a process, collect data and then apply the tools of total quality. The process improvement teams may go through many iterations and through each iteration will make improvements. Process improvement teams are continually improving the process to which they are assigned.

b. Cross Functional/Work Unit Teams

All of the schools studied have formed both work unit and cross functional teams. Work unit teams will form naturally either around or within a given process. Work unit teams are accustomed to working together. They share common goals and understand the processes over which they have control.

Cross functional teams generally aren't accustomed to working together, and work across functional boundaries. Individual members "own" or have control over one part of the process that is being improved. Cross functional teams hold the promise of having the greatest impact on improving the organization.

Successes have been demonstrated with both types of teams. However, a word of caution is in order. At two of the schools, individual cases were cited in which cross functional teams were unsuccessful. The conditions for such failure seems to be as follows: The teams were formed unnaturally. Members were selected by management according to the organizational chart instead of the relationships within the process. They neither understood the process or had any real interest in improving it. The problems were exacerbated by the fact that team members were not accustomed to working together and had their own individual agendas.

Our culture dictates individualism and competitiveness, which can lead to optimization of the

individual parts of a system or process. This can lead to sub-optimization where the part is optimized to the detriment of the whole. Working in teams requires a completely different mind set based on cooperation. At the organizations studied, inter-organizational competitiveness has been softened and teamwork is gradually emerging to take its place.

Getting people to work together in teams can be a new concept for many. Clearly, to change the organization through the effective use of teams will require training and practice in team dynamics and consensus building.

3. Structural Change

Six of the seven schools interviewed reported that the organizational structure had changed as a result of the quality effort. Three of the schools reported major structural changes. Major changes include: a reduction from seven colleges to four, an increase from four to thirteen departments based on product line and shifting the positions of Vice Presidents from line authority to staff, permitting Deans to report directly to the President.

Although organizational structures have changed, organizational charts have not been altered substantially. The organizations studied maintain typical hierarchal charts as would be expected at any educational institution. What is unique is that the relationships within the organization are changing.

The organizational chart fails to capture the new relationships within the organization. When the organization is viewed as a process, these relationships become more apparent. The process determines what, why and how things actually get done. Functional silos as represented on the typical chart begin to come down. Barriers are broken down between units and departments as processes are improved. Communication and cooperation between departments and units are enhanced. The organizations studied are beginning to become more open and have flattened out as internal relationships change.

At Belmont University, the typical organizational chart is a representation of where to find people rather than the relationships between the various parts and individuals within the organization. They use a diagram similar to Figure 4-2 to represent the relationships within the organization [Hillenmire 91].

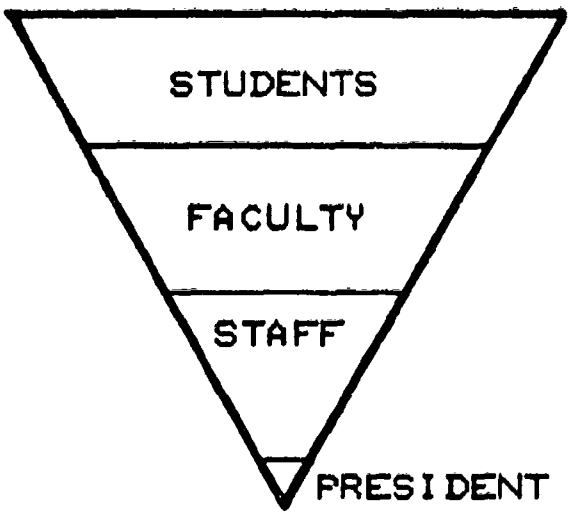

Figure 4-2 ORGANIZATION CHART

E. STRATEGY

Two general strategies for implementation of the quality effort emerged from the research. The two strategies are identified here as spontaneous and deliberate. The differences are primarily a result of timing vice substance.

The spontaneous type could be referred to as a "just do it" strategy. Implementation is pursued as a blanket approach, organization or department wide. Teams are being trained and empowered while leadership sets the course for the organization. There are many events taking place simultaneously throughout the organization.

In contrast, the deliberate strategy pursues "quiet implementation." Top Management lays the foundations for the rest of the organization to pursue total quality. Organizational policy is developed based upon the principles of total quality. The organization meets policy requirements without necessarily having the knowledge that it is based upon the new philosophy. Teams are trained in the required skills. There are no bells and whistles. Teams are formed and function without applying labels to their activities.

Neither of these strategies are mutually exclusive and the former method is predominant (six of seven schools) at the organizations studied. It is difficult to determine which type of strategy produces the best results. The tradeoff is between laying the foundation at the top levels first, followed by the rest of the organization and comprehensive implementation throughout the organization. In either case the goal is to institutionalize total quality as "the way we do business."

1. Vision, Mission, Planning

Vision, mission and planning processes serve to establish congruence between individual activities and organizational imperatives through the implementation of Total Quality. The quality effort is intimately related to the organization's vision, mission, plans and goals which form the foundations for the quality effort. Formulation of these

foundations is important, but even more important is the communication of these concepts throughout the organization. Nearly every school visited stated that communication of these fundamentals was a weak area.

These foundations are based on organizational values, beliefs and norms which form the organizational culture. Every organization has a mission statement, strategies, plans and goals. The key is to capture the values of the organization such that these documents have meaning to the individuals in the organization.

For those implementing total quality, it is not sufficient to develop vision or mission statements, strategies or plans at the top levels of the organization. In most organizations, these foundations are articulated in writing, but were developed by and belong to top management, not to the individuals in the organization. Communication is required is to give these concepts value throughout the organization. Significance lies in making these documents real for the rest of the organization.

Developing vision and mission statements, plans and goals for the quality effort is not a simple task. For example, Ford Motor Company labored for three years before announcing their mission, values and principles [Walton, 1986]. Development can take a considerable amount of time and effort. The goal is to integrate all of the functions and component parts of the organization under one mission, one

understanding which is well planned, coordinated and articulated to provide consistency and continuity of effort [Barnes, 1991].

2. Applications

The majority of applications at each of these schools are primarily directed at administrative processes. There are a number of reasons for this approach to implementation.

One of the assumptions of total quality is that management is responsible for the majority of problems in an organization [Juran, 1989, Crosby, 1979]. According to one quality coordinator,

> "By design we elected to begin our quality effort on the administrative side of the house... Administration really is 90% of the problem. (We) decided to put our own house in order first." [Stass, 1991]

If the premise that management is responsible for the majority of problems is accepted, then application on the administrative side is a logical choice.

Additionally, administrative processes in an academic institution are very similar to processes that have been improved within industry. The benefits of total quality have been proven within industry. There are examples and analogues to follow which mirror administrative processes in academe. The administrative side is the path of least resistance. Application of the tools, measurement and outcomes assessment is much more straightforward.

If the system is viewed as a process as in Chapter I, Figure 1, it is clear that interrelationships exist between administrative and academic functions. Improvements in administrative processes can lead to improvements on the academic side. For example, improving a copying process that results in dollar savings and faster service can permit those resources to be directed to academic endeavors. An improvement in administrative processes can provide spill over benefits to academic processes.

Application of total quality methods within academic processes is seen as more problematic. Efforts at the schools studied can be broadly characterized as experimental. There really are no analogues with which to compare. One of the difficulties is that the results within academic processes can be invisible. The effects can take a long time to manifest, and may not become evident for many years after the classroom experience. This makes measurement and bench marking more difficult.

> "The most important figures needed for management of any organization are unknown and unknowable." [Deming, 1982]

All of the institutions studied have pursued applications directed at academic processes. Successes that are meaningful to outside observers are difficult to relate for the reasons stated above. Improvements are being made in instruction, curriculum development, course development and delivery.

Measurements are being developed and applied to academic processes in the organizations studied.

In Chapter III, it was reported that faculty in the schools studied generally view the effort positively. However, a common theme is that faculty are more resistant to the concept of total quality than administrators or support staff. Faculty often have more allegiance to the discipline than to the organization. Many are already doing a good job and believe that there is no need to dramatically change in order to improve. The only remedy is knowledge. They cannot be expected to support an effort that they do not understand, or which they may perceive as just another program or a method to achieve greater control or to create greater administrative burden. They need to learn the philosophy, methods and tools, find value in them and develop their own applications. Faculty are managers. They manage the curriculum, their courses and students. Faculty must learn the new management methods in the same way that staff and administration must learn them.

F. SYSTEMS

1. Suggestion Systems

The experiences of Japanese firms indicate that they have some very robust suggestion systems [Imai, 1986] Three of the seven schools studied have established suggestion systems. Two of the three reported that they were not working

very well. One of the three schools without suggestion systems, had a program but discontinued it.

Precise reasons for the difficulties are unknown. One explanation is that the suggestion system was artificially imposed upon the organization before it was ready [Stass. 1991]. Another explanation is that the suggestion system is used in desperation when teams are unable to correct the situation. An alternative view suggests a cognitive problem. [Zilinsky, 1991]

The suggestion systems that people are used to working with are used for complaints, typically based on a reward system which reinforces dramatic improvements and innovations and not incremental improvement. Clearly improvement of the suggestion systems will require changing the way in which they are perceived.

2. Reward Systems

Five of the participating schools reported a change to the recognition/reward system as a result of the quality effort. However, only one of these has a well developed system of celebration as is suggested by the literature. The lack of any "real" recognition or reward system to reinforce the effort is somewhat perplexing. All of these schools have achieved a certain degree of success in their quality efforts.

One explanation is that pride in workmanship [Deming, 1986] may be reward in itself. It is possible that improving the system improves the work and worker satisfaction is reward in itself. There are intrinsic benefits in the quality effort. Whether these intrinsic benefits are sufficient to sustain the quality effort remains an open question.

Some difficulties in establishing a viable reward system appear to be unique to higher education. Development of a practical and acceptable reward system is difficult in any organization. Celebrations and trinkets may work well in some parts of the organization. However in an academic environment, many of the distinctions and accolades for the faculty come from outside the organization. The professor is rewarded through research, publication and reinforcement within the discipline by his/her peers. These rewards have little to do with teaching. The dilemma is age old, the research/teaching paradox.

3. Education/Training

Education and training in the methodology of total quality is a fundamental prerequisite and provides the foundation for the quality effort. In order to launch a quality effort, leadership must be educated. Before employees can be empowered, they must learn the philosophy, methods and tools. Teams require education in total quality and team dynamics. At each of the organizations studied, education is

an ongoing process. All of these schools have established a goal to train everyone in the organization.

Education is an investment. The quality effort requires resources up front for education. The required resources include training costs (instruction and materials) and time allocated for education. At each of the institutions studied, time is allocated from the normal workday for training. Investment in education sends a strong signal that organizational leadership supports the quality effort. Education can drive out fear and moderate resistance to change or at least provide those that resist with the knowledge of what it is they are resisting [Hillenmire, 1991].

G. OUTCOMES

1. Measurement

Thus far, the tools of total quality have been mentioned only in passing, focusing on establishing the foundations for a total quality. Measurement, assessment, and evaluation are essential to the quality effort at each of the schools studied.

The purpose of measurement is to learn how the organization's systems and processes actually function. Data gathered can then used to make improvements. A sound understanding of the concept of variation is required. Measurements can be used to determine the root causes of a

problem or to define what is actually taking place in a process.

At best, any measurement is little more than a surrogate for reality. For example, in the traditional academic setting, grades are used as a surrogate measure of knowledge or skill attained. The validity of this measure is questionable. Do grades really adequately serve as a surrogate for knowledge and predict future success?

Although specific types of measurements used are important (determining what to measure), what is truly significant is how they are used. Measurements used in a traditional managerial fashion, to assign blame or meet numerical quotas, will be falsified through fear. When used in this manner, measurements can weaken the organization. All of the organizations studied, understand the concept of variation and understand that measurement is a means and not an end. The focus is shifting from reliance on measures of outcomes to measures for improving processes. When processes are improved, outcomes follow.

There are two levels of measurement being employed at the institutions studied: One level is <u>organizationally oriented</u> and focuses on measurements such as retention and placement rates. The second level is <u>process oriented</u> using measurements such as course critiques or reproduction center measures. Each organization, department or unit makes the determination of which measurements are important based upon

the definition of quality and needs of the customer. Measurements are situation specific and defined by the owners of a process.

2. Results

In Chapter III, five of the seven schools reported that the benefits compared favorably to the costs. The remaining two schools stated that it was difficult to determine if benefits compared favorably to costs. Only two of the schools reported that they kept records on the cost of quality and all schools reported that greater emphasis was needed in measuring the cost of quality.

All of the schools recognize that implementation of total quality will take a substantial period of time. They also recognize that the return on investment can take a number of years. The full benefit of the quality effort will be spread across many years into the future.

Benefits and savings achieved can substantially affect the operations of the organization. When improvements are made that achieve dollar savings those savings not only accrue in the current year but into the future, until the process is changed [Topper, 1991]. For example, saving $10,000 in copying expense this year means saving $10,000 the following year and the year after that.

Additionally, if the organization is viewed as a process or a series of processes it is apparent that there are

interdependencies throughout. Improvements achieved in administrative processes can provide spill over benefits to the academic side and vice versa. For example, improving the copying process not only reduces costs and saves paper, it can free up faculty time so that they can concentrate on their own process which is teaching. Staff time may also saved so that they can concentrate on their processes. Improvements can result in chain reactions of savings over time or spill over benefits. Every improvement has the potential to produce these effects. Resource savings may be significant, but more important is how those savings are used. [O' Donnell, 1991]

V. CONCLUSIONS AND RECOMMENDATIONS

This chapter presents conclusions based upon the information contained in previous chapters, interviews with representatives of schools listed in Appendix C and total quality literature. The research questions presented in Chapter I will also be answered. This study was conducted with an emphasis on post secondary educational institutions currently applying the principles of total quality internally. However, with modifications, the conclusions and recommendations presented here could probably be applied to any educational institution.

A. PRECONDITIONS FOR SUCCESS

1. Organizational Change

Each of the institutions studied is in the process of transformation. That transformation is based on the principles of total quality. The goal of the transformation is to institutionalize total quality as a way of doing business and establish a process of continuous improvement.

At the center of any attempt of a quality effort is organizational change. The quality effort will require changes that will affect the most fundamental aspects, the very fabric of the organization. Such a change requires a shift in the basic values, beliefs and norms of the

organization. The changes go beyond a transformation of management; organizational culture will also be affected. These changes cannot occur without organizational learning and knowledge.

2. The Paradigm

"Our destination is never a place but rather a new way of looking at things." - T. S. Eliot

The philosophies, methods and tools of total quality are straightforward. The methods are simple, and have proven effective in industry. They have also been applied successfully within the institutions studied.

Total quality is much more than a management method or a series of philosophies, methods and tools for organizational change. Quality can be thought of as a lens through which the organization, its processes and products can be viewed in new and different ways. The what, why and how organizational processes actually function can be viewed more clearly through the lens. Organizational realities are no longer obscured. The organizational paradigm is made of underlying assumptions that shape perceptions, procedures and behavior. Total quality requires dramatic changes in management methodology and provides the framework for creating a new paradigm.Deep organizational change requires a paradigm shift [Mohrman, 1989]. The change is difficult, policies and procedures established in the past have inertia and momentum which work against change.

B. IS ACADEME DIFFERENT?

> "The Quality Concept is not limited to Business; it can be an educational culture as well." Dick Lennes, President Hutchinson Technical College [Hutchinson, 1991]

Academe is unique in its mission, the services that it offers and on the ramifications it has on our entire society. Providing education is clearly not the same as producing automobiles or providing electricity. Education is the long term element or ingredient in this society's success. According to Susan Hillenmire of Belmont University,

> "Development of a human being, that's a lot different than hands on (manufacturing). You can't afford to screw it up... It's a lot more serious than miss-threading a screw and counting defects. It has ramifications for our entire society." [Hillenmire, 1991]

Academe may be different in another way, the organizations are predominantly staffed by highly qualified, independent professionals. This may translate into greater resistance to change and greater difficulty in making "quality everybody's job."

Academe is a different environment. But, when it comes to application of the principles of total quality and organizational change, academe is really no different. Although most academic institutions aren't classified as businesses, they are service organizations with a broad base of internal and external customers. Processes can be invisible, performance is difficult to measure and quantify. Implementation in any organization is difficult, the magnitude

of the change can be tremendous and the process can take a considerable amount of time.

C. IMPLICATIONS

There is no cookbook for implementation. All of the institutions studied are unique in function and structure. Each organization possesses its own individual culture and environment. All have selected different routes for implementation of total quality. They have different strategies, methodologies, and have chosen different applications.

There are several ingredients that they have in common. They are involved in organizational and cultural change. The foundations for this change are being laid. The basic foundations include those elements in Appendix E. The goal of these efforts is to institutionalize total quality as a way of doing business. Total quality is therefore both a means and a goal.

1. Constraints

Every institution pursuing total quality will encounter certain constraints on process improvements. Some improvements may require changes that impinge upon other processes which lie outside the organizations span of control. Organizations will encounter systems in which they will be unable to make improvements. For example, the legal system may contain regulations which stand in opposition to the

quality effort or a particular process improvement. Alternatively, a Board of Trustees may impose limitations which could hinder some quality activities.

Suppliers may represent another constraint. Supplier behavior can be difficult to influence. In academe, the supplier may be high schools or local business. The environment will present challenges to both process improvement and the quality effort.

In those schools that are implementing on a departmental basis, such constraints may be closer to home. The department is encompassed by the larger organization. The individual school or department must work within the systems and processes established by the organization. For example, if a department or school attempts to improve the registration process, the processes of the larger organization must be improved simultaneously.

These constraints were addressed at the schools implementing on a departmental basis. The following question was posed, "How do you proceed with the quality effort when the larger organization is not pursuing the same end?" The answer was involvement and communication. When a department or school encounters a constraint, they include representatives of the larger body in the effort.

When a school is implementing on an organization wide basis and a constraint is reached, liaison is established with stakeholders responsible for the constraint. Total quality

can be successfully implemented on an organization wide, departmental or work unit level. However, on a departmental or unit basis, implementation may be slightly more difficult than when implementing organization wide. Departments and units do not have the same degree of control over the many processes that constrain them. It follows that individuals can launch their own quality efforts. Efforts at two of the institutions contacted in the telephone survey began with individual efforts in the classroom and gradually spread to the rest of the department.

2. Risks

There are a number of risks involved in implementing a quality effort. Those considering implementation should consider the magnitude of the changes that will be required and the difficulties of institutionalizing quality. The current paradigm and systems that support it have evolved based upon tradition, education and our culture. Changing the basic values, beliefs and norms within an organization is difficult undertaking and there are certain inherent risks.

Two Presidents and one Dean were questioned on the topic of personal and professional risk. Leadership (as opposed to management) takes courage, the courage to move the organization in a new direction that is largely uncharted in the academic environment. Each of these leaders is truly visionary. They see the connection between what takes place

in their organizations and the impact on the larger society. Each of these presidents felt that they had put their job on the line when the organization adopted total quality management. The risk to top leadership is perceived as a real threat. However, according to one of these leaders, "the greater the risk, the greater the potential benefit."

During implementation, paradoxes will undoubtedly develop. Inconsistencies will develop between the new ways and the old. Everything cannot be changed at once and the change process takes time. As changes begin to take place, personnel within the organization will begin to question these inconsistencies. Management may find that they occasionally revert to their old ways. The challenge to management is to determine how to deal with these situations.

Total quality is often viewed as another program or just another buzzword. A certain level of "programmatic resistance" can be expected. Individuals have seen programs come and go. Programs have a beginning and an end which often coincides with the term of the top management. Therefore, some organizations prefer to call it an effort or initiative. Quiet implementation strategies are an attempt to overcome that resistance. At all of the organizations studied, representatives were emphatic, "This is not a program." Developing strategies or determining how to convince the organization's members that total quality is not a program is one of the difficult challenges to management.

Organizational change can be chaotic and difficult. With that change comes a certain degree of loss of control. Total quality is predicated on placing control, responsibility, and ownership of processes lower in the organizational hierarchy. Management will feel that it is losing control based upon the old management control paradigm. Middle managers, including faculty can feel particularly threatened. At three of the institutions studied, personnel left the organization in partial response to the quality effort.

When individuals begin to see the organization and it's processes through the paradigm of total quality, criticism of processes will develop. Only one of the schools interviewed mentioned this as a caution. It is always easier to see fault in the process of another than to recognize fault in your own. Those seeking changes must proceed delicately and with respect for others, ensuring that criticism is used constructively.

D. RESEARCH QUESTIONS ANSWERED

This section will provide answers to the six research questions presented in the first chapter. The answers are based upon in depth interviews conducted during site visits, telephone interviews and review of current literature on the topic of total quality in education.

1. What is the state of total quality programs in academia?

This study identified 126 institutions of higher education that are currently applying the principles of total quality within their organizations. As is apparent from the data in Appendix C, the number of practicing institutions has been growing at an increasing rate over time. The majority of activity has taken place in the last two years. There is growing interest in applying the principles of total quality in academe. (See Figure 5-1)

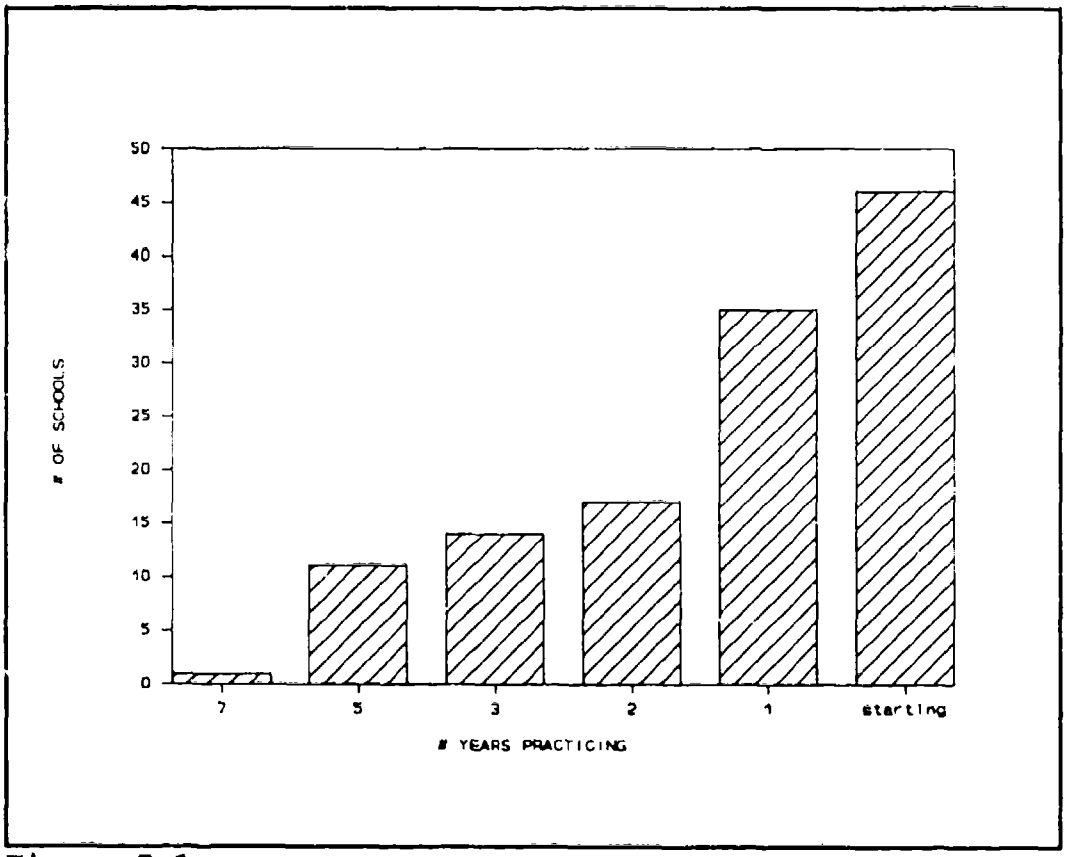

Figure 5-1

Each of these schools is involved in transition. They moving toward a new state based upon the principles of total quality. None of the institutions contacted can claim that quality has been institutionalized as the way the organization operates. In general, total quality in academe is its infancy. Even the most advanced institutions have only been applying the principles for a few years. Although these schools have only been practicing for a short time, the changes within some organizations and the resulting improvements and results are impressive. Evidence of successful implementation and applications is only now becoming available. The information presented in this study shows that total quality can be successfully applied in institutions of higher education.

2. Which post secondary institutions are currently pursuing a total quality approach?

Appendix C contains a listing of institutions currently pursuing a total quality approach as identified through this research.

3. What implementation strategies have been successfully used?

Each of the schools selected for additional study and in-depth interviews have developed their own unique strategies for implementation. Two general strategies were observed

during site visits. The first is identified as spontaneous; an organization wide or departmental "blanket approach". The second strategy is identified as deliberate; "quiet implementation," with the foundations for quality provided by top management. Each of the strategies pursue organization wide or department wide implementation, install staff and management structures to support the effort in addition to pursuing the elements listed in Appendix E. Additionally, three schools have used pilot projects to promote the effort. Others have used experiments and teams as training tools to advance implementation. As stated earlier in this chapter, there is no cookbook. Each school must select it's own strategy based upon its unique internal and external environment.

4. Which processes have been targeted for improvement?

Chapter III and IV discuss the details of those processes that have been targeted for improvement in the organizations selected for further study. Processes targeted for improvement are primarily administrative and support functions. Academic processes have also been targeted.

5. What successes have been achieved?

Chapter III and IV discuss the successes of the seven institutions which completed in-depth interviews. However, three institutions have had some remarkable successes worth

noting. At one institution, the quality effort began with a budget of $300,000 for training and the addition of a full time position. At that time, it was estimated that the return on investment to break even would take two years. Improvements were made in garbage collection and mailing which generated savings resulting in a return on investment in less than one year. These savings were then passed on to the individual schools of the university in the form of reduced allocated costs. These savings not only accrue in the current year but will continue into the future until the process or system is changed. [Topper, 1991]

At another institution, improvements were made in the copying process resulting in savings of $10,000. $8000 of that savings was used to invest in a desk top publishing system in order to save $12,000 more. At this institution, the President reports a domino effect. The savings are used to add value to the organizations processes. [O' Donnell, 1991]

Examples of success are not limited to dollar savings and administrative improvements. Educational improvements have been made as well. One of the institutions contacted has been applying total quality for just over five years. Over that time period, average test scores on the Graduate Record Examination (GRE) rose from 1050 to 1220. The organizations drop rate as a percentage of the student body was reduced from 30% to between six and seven percent. Class ratios have

dropped from 40-1 to 22-1 while enrollments rose 15% and the budget dropped six percent. [Sommerville, 1991]

6. What problems have been encountered?

Chapter III listed some of the difficulties experienced in the seven institutions that were selected for further study. In general two types of difficulties were mentioned. The first type of difficulties are those that might be expected when implementing in any organization. They include such problems as philosophical differences, quality definitions, communications and teamwork.

The second type of difficulties are peculiar to the academic processes within the organization. Difficulties such as these might be expected when implementing in an organization largely composed of professionals. They include, faculty allegiance and resistance, and the tendency for teams to stall as a result of academic discourse.

E. RECOMMENDATIONS FOR FURTHER RESEARCH

"There is no substitute for knowledge"
-W. Edwards Deming

Throughout the research, the following phrase was repeated several times, "the more I learn, the more I realize what I don't know." There is currently a great deal of literature on the philosophy, methods, tools of total quality. The body of

research on application of total quality in industry and business is also growing. However, very little has been written on the application of the principles of total quality in education and a real need for further research in this area exists.

1. Total Quality in Academe

A follow-on to this thesis might examine the state of total quality in academe through the use of a survey. This method would facilitate in-depth analysis of a large sample size. Sampling could be targeted at those organizations currently applying the principles of total quality as identified in this study.

2. Improving Educational Processes

Much of what is done in education is based upon tradition and intuition. Are the processes effectively and efficiently producing the desired outcomes? What types of measures adequately assess organizational and process outcomes? What bench marks assess organizational health and vitality?

3. Quality Assessment

A great deal of work is taking place in quality assessment at several of the organizations contacted. Several institutions have been working on adapting the Baldridge criteria to academe. These efforts are being undertaken independently. Can a consensus be reached on adapting the

Baldridge criteria to education? What methods are available to assess quality efforts in educational institutions? Are alternative assessment tools required for academe?

4. Quality Definitions

Representatives from many organizations have stated that the language of total quality is foreign to education. A common complaint is that the language and definitions were created for use in industry. Standard definitions would provide the foundations for a common language used for internal and external communication. Additionally, definitions derived in academe, using the language of academe might be better understood and accepted than the current "business" vernacular. Can Academe agree on standard definitions?

5. Cost Benefit Analysis

How do the benefits of a quality initiative compare with the costs? Can a quality effort be justified on the basis of economic considerations? Can any of the ongoing efforts in academe stand up to a rigorous cost benefit analysis? Such an analysis has the potential to provide concrete evidence in bottom line terms that total quality is applicable in the academic environment.

6. Resistance to Change

What are the sources for resistance to change? Can they be overcome? Is there greater resistance to change from

professionals than the community at large? What methods can be successfully employed to facilitate organizational change and moderate resistance?

> "Quality control begins with education and ends with education." [Ishikawa, 1985]

APPENDIX A: LIST OF INSTITUTIONS CONTACTED

Anoka-Ramsey Community College
Arizona State University
Arkansas Technical University
Auburn University
Baylor University
Belmont University
Bradley University
Brainerd-Staples Technical College
Brigham Young University
California Institute of Technology
California State University
-Dominiquez Hills
-Long Beach
-Northridge
-San Bernardino
-San Diego
-San Jose
Cal Poly Pomona
Cal Poly San Luis Obispo
Carnegie Mellon University
Central Connecticut State University
Central Michigan University
Central Missouri State University
Chaminade University
Cheyney University
Claremont Graduate School
Clemson University
Colorado State University
Colorado Technical College
Columbia University
Contra Costa College
Cumberland County College
DeVry Incorporated
Defense Systems Management College
Delaware County Community College
Drake Business School
Drexel University
Duquesne University
Eastern Michigan University
East Tennessee State University
Edinboro University of Pennsylvania
El Paso Community College
El Camino College
Ferris State University
Florida Atlantic University
Florida International University
Florida Institute of Technology
Florida State University
Fordham University
Fox Valley Technical College
Fullerton College
Gateway Community College
George Washington University
Georgia Institute of Technology
Georgia Southern College
Governors State University
Grand Rapids Community College
Green River Community College
Harford Community College
Hartford Graduate Center
Harvard University
Harvey Mudd College
Hawkeye Institute of Technology
Honolulu Community College
Houston Community College
Hutchinson Technical College
Illinois Institute of Technology
Jackson Community College
Jacksonville State University
John Carrol University
Kansas State University
Lamar Community College
Lehigh University
Lorain County Community College
Louisana State University

Loyola College of Maryland
Marian College
Marist College
Marshall University
Massachusetts Institute of Technology
Miami University
Michigan State University
Michigan Technological University
Mid America Nazarene College
Milwaukee Area Technical College
Milwaukee School of Engineering
Monroe Community College
Montgomery College
New Mexico State University
New York University
North Dakota University System
-University of North Dakota
-Bismark State College
-Dickinson State University
-Lake Reigon
-Mayville State
-Minot State University
-State College of Science
-State University,
Bottineau
Fargo
Williston
-Valley City State University
Northeast State Technical Community College
Northern Essex Community College
North Harris College
Northwestern University
Northwest Missouri State University
Oak Ridge Assoc University
Ohio University
Oregon Graduate Institute of Science
Oregon State University
Oklahoma State University
Palm Beach Community College
Pellissippi State Technical Community College
Penn State University
Pepperdine University
Portland Community College
Portland State University
Purdue University
Rochester Institute of Technology
Rensselaer Polytechnic Institute
Samford University
Southeastern Massachusetts University
Southern College of Technology
Southern State University of Missouri
Spokane Community College
St Ambrose University
St Johns Fisher College
Stanford University
Stat-A-Matrix Institute of Tampa College
State University College at Buffalo
State University of New York
-Buffalo
Texas A & I University
Texas A & M
Texas Tech
Trenton State College
Truckee Meadows Community College
U. S. Air Force Academy
U. S. Naval Academy
University of Alabama
-Huntsville
-Tuscaloosa
University of Alaska
-Fairbanks
University of Arkansas
University of Chicago
University of Colorado
University of Delaware
University of Idaho
-Moscow
University of Illinois
-Urbana/Champaign
University of Houston
University of Kansas
University of Maryland

University of Massachusetts
-Dartmouth
-Lowell
University of Miami
University of Michigan
University of Minnesota
University of Mississippi
University of Missouri, Rolla
University of Nebraska
University of Nevada, Las Vegas
University of New Mexico
University of North Carolina
University of North Florida
University of Notre Dame
University of Pennsylvania
University of Phoenix
University of Pittsburgh
University of South Carolina
-Spartanburg
University of Southern California
University of South Florida
University of St. Thomas
University of Tennessee
-Chattanooga
-Knoxville
-Space Institute
University of Texas
University of the South
University of Toledo
University of West Florida
University of Wisconsin
-Green Bay
-Oskkosh
-Madison
-Milwaukee
-Stout
University of Wyoming
Vanderbilt University
Villanova University
Virginia Polytechnic Institute
Wayne State University
Weber State University
Western International University
West Virginia University
Widener University
Winona State University
Xavier University

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APPENDIX B: TELEPHONE INTERVIEW GUIDE

1. Does the organization have an active on going Total Quality effort?

    a. Are you actively practicing TQ internally?

    b. Is there a central TQ coordinator or TQ department?

    c. Is the TQ effort organization wide or confined to individual schools or departments acting independently?

2. How long has the organization been practicing TQ?

3. Which of the following functions are involved in the TQ effort?

    a. Administration b. Support Functions
    c. Academic

4. Is there an on going education and training program?

    a. Who will receive training?

5. Does the institution follow the theory or teachings of any particular individual?

6. Have the services of an external consultant ever been used?

7. What was the impetus for change?

    a. reaction to the environment?
    b. anticipatory (required by an individual)

8. Who was the champion for change?

9. Do you know of other organizations that are practicing a total quality approach?

Where?	Administration	_____
	Academic	_____
Who?	Staff	_____
	Faculty	_____
	Students	_____
	Departmental	_____
	Organization Wide	_____
	How long?	_____
	Courses offered	_____

APPENDIX C: PRACTICING INSTITUTIONS

The following three tables contain listings of those institutions that are actively practicing total quality internally. The data provided in this appendix were obtained in an informal telephone interviews conducted in the period of September 15 to November 15, 1991. (Appendix B provides a copy of the interview guide) These listings were constructed based upon responses given by one or more representatives at each institution who are knowledgeable about the organization's quality effort. This appendix does not claim to contain all of the institutions of higher education that might be practicing total quality.

Table 1 provides a listing of institutions that are pursuing total quality on an organization wide basis and have been involved in that effort for a period of more than two[5] years. Table 2 presents a listing of organizations that are pursuing total quality on a departmental basis and have been practicing for more than two years. "Departmental" is defined as an effort confined within a College, School, Department, unit, area, or other subdivision(s) of the larger

[5]The two year time period was arbitrarily selected for ease of presentation. Several institutions have achieved notable success in a shorter time period.

organization. The third table is a listing of all other schools that were identified as practicing total quality internally. The "department" name is provided when known.

Table 1

SCHOOL	ORG WIDE	DEPARTMENTAL	ACADEMIC	ADAMINISTRATIVE	STUDENTS	FACULTY	STAFF	# YEARS	
DELAWARE	X		X	X		X	X	5	
HUTCHINSON	X		X	X	X	X	X	5	
JACKSON	X			X	X	X	X	5	
FOX VALLEY	X		X	X	X	X	X	5	
MILWAUKEE SCH ENGR	X		X	X	X	X	X	5	
N.W. MISSOURI	X		X	X	X	X	X	5	
COLORADO TECH	X		X	X	X	X	X	3-5	
DSMC	X		X	X		X	X	3.5	
BELMONT	X		X	X	X	X	X	3	
DRAKE BUS	X		X	X	X	X	X	3	
HAWKEYE	X		X	X	X	X	X	3	
LAMAR C.C.	X		X	X	X	X	X	3	
EL CAMINO	X		X	X		X	X	2.5	
EL PASO	X		X	X	X	X	X	2	
MONTGOMERY	X		X	X	X	X	X	2	
PALM BEACH	X		X	X	X	X	X	2	
SAMFORD	X		X	X	X	X	X	2	

SCHOOL	ORG WIDE	DEPARTMENTAL	ACADEMIC	ADAMINISTRATIVE	STUDENTS	FACULTY	STAFF	# YEARS	
STAT-A-MATRIX	X		X	X	X	X	X	2	

Table 2

SCHOOL		DEPARTMENTAL	ACADEMIC	ADMINISTRATIVE	STUDENTS	FACULTY	STAFF	#YEARS	
TEXAS TECH		X	X	X	X	X	X	7	College of Engineering
AUBURN		X	X	X	X	X	X	5	Economic Development
DEVRY		X	X	X	X	X	X	5	Grad School of Mgmt
FLORIDA INST TECHNOL		X	X	X	X	X	X	5	Elect & Comp Eng
FORDHAM		X	X	X	X	X	X	5	School of Business
U TENN KNOXVILLE		X	X	X	X	X	X	9	College of Business
GREEN RIVER		X	X	X	X	X	X	4	Training Center
CENTRAL MICHIGAN		X		X			X	3.5	Support Services
NORTHWESTERN		X	X		X	X	X	3.5	Manufact Management
U of MIAMI		X	X	X	X	X	X	3.5	Engineering Business
COLORADO STATE		X		X			X	3	Bus/Finance Admin Svcs
CENTRAL MISSOURI	@	X	X		X	X	X	3	Curic Devel @ Moving org wide

SCHOOL		DEPARTMENTAL	ACADEMIC	ADMINISTRATIVE	STUDENTS	FACULTY	STAFF	#YEARS	
EDINBOROUGH U OF PENN		X	X	X		X	X	3	Sci, Mgmt & Tech
OREGON GRAD INSTITUTE	@	X	X	X		X	X	3	@ Moving Org Wide
ST JOHNS FISHER		X		X		X	X	3	Administration
W. VIRGINIA UNIVERSITY		X	X	X		X	X	3	College of Engineering
COLUMBIA U		X	X	X	X	X	X	2	Bus School
HARVARD		X		X		X	X	2	Info Technology
OREGON STATE		X		X	X	X	X	2	Finance & Admin
TEXAS A & I		X	X			X	X	2	Math Dept
TEXAS A & M		X		X		X	X	2	Civil Engineering
U OF CHICAGO		X	X	X	X	X	X	2	Bus School
U OF MARYLAND		X		X			X	2	Pilot Projs
U OF MINNESOTA	@	X	X	X	X	X	X	2	@ Moving Org Wide
U WYOMING		X		X			X	2	Finance Dept

SCHOOL		DEPARTMENTAL	ACADEMIC	ADMINISTRATIVE	STUDENTS	FACULTY	STAFF	#YEARS	
EDINBOROUGH U OF PENN		X	X	X		X	X	3	Sci, Mgmt & Tech
OREGON GRAD INSTITUTE	@	X	X	X		X	X	3	@ Moving Org Wide
ST JOHNS FISHER		X		X		X	X	3	Administra-tion
W. VIRGINIA UNIVERSITY		X	X	X		X	X	3	College of Engineering
COLUMBIA U		X	X	X	X	X	X	2	Bus School
HARVARD		X		X		X	X	2	Info Technology
OREGON STATE		X		X	X	X	X	2	Finance & Admin
TEXAS A & I		X	X			X	X	2	Math Dept
TEXAS A & M		X		X		X	X	2	Civil Engineering
U OF CHICAGO		X	X	X	X	X	X	2	Bus School
U OF MARYLAND		X		X			X	2	Pilot Projs
U OF MINNESOTA	@	X	X	X	X	X	X	2	@ Moving Org Wide
U WYOMING		X		X			X	2	Finance Dept

North Dakota University System *	
-University of North Dakota	
-Bismark	
-Bottineau	
-College of Science	
-Dickinson	
-Fargo	
-Lake Reigon	
-Mayville	
-Minot	
-Williston	
-Valley City	
Northeast State Technical Community College *	
Northern Essex Community College 1	
North Harris College 1	
Ohio University 1	Business School
Oklahoma State University *	College of Business
Pellissippi State Technical Community College 1	
Penn State University *	
Portland State University *	
Rochester Institute of Technology *	College of Business
Southern College of Technology *	
State University College at Buffalo *	Industrial Tech
Trenton State College 1	
Truckee Meadows Community College*	
United States Air Force Academy 1	
United States Naval Academy 1	
University of Kansas *	School of Business
University of Michigan *	
University of Missouri, Rolla 2 **	
University of Nebraska 1	Medical Center
University of Nevada Las Vegas *	Business and Engineering
University of North Florida 1	
University of Pennsylvania 1	Central Administration
University of Phoenix *	
University of Pittsburgh *	School of Engineering
University of South Carolina -Spartansburg *	School of Business
University of South Florida *	
University of Tennessee	

-Chattanooga *	Engineering Management
-Knoxville 1	College of Engineering
-Space Institute *	Engineering Management
University of the South *	
University of Wisconsin	
-Green Bay *	
-Madison 1	
-Milwaukee 1	
-Oshkosh 1	
-Stout 1	
Vanderbilt University 1+	Human Resources
Virginia Polytechnic Institute *	
Wayne State University 1+	
Weber State University *	
Winona State University 2 **	
Xavier University *	

* Just starting, early stages, etc.
** Additional information not provided.

APPENDIX D: INTERVIEW DISCUSSION GUIDE

A. General

Organization Name:

Type of institution:

University	____	2 year	_____
College	____	4 year	_____
Technical	____	Graduate	_____

Size of organization:

Faculty	_____	Support	_____
Staff	_____	Other	_____
Students	_____		

How long has the organization been practicing Total Quality?

What name is used to describe the quality effort?

What is your definition of quality?

What is the definition of quality as applied to academia?

Teaching
Research
Service
Students

Does the organization follow the philosophy of any particular individual?

Traditional - single philosophy
Homegrown - self developed
Hybrid - combination of philosophies
combination tailored to needs of organization

B. MOTIVATION

Why did the organization adopt a total quality approach?

a. Reactionary- Environment

Competition
Enlightened leadership
Pushed by leadership
Crisis in organization
Budget cuts

b. Anticipatory

Future uncertainty?

Was there a critical event necessitating the change?

Why is the organization pursuing Total Quality, what are the goals; what goals will total quality help you to achieve?

Efficiency _____
Responsiveness/Speed _____
Quality of product _____
Quality of work _____
Image or reputation _____
Customer satisfaction _____
Economic payoff _____

C. PERSONNEL/LEADERSHIP

1. Champions:

Who was/were the Champion(s) for the change to total quality? (The person(s) with the initial vision, not necessarily who is in charge of implementation).

Top Management _____
Middle management _____
Faculty _____
Employee _____

- What is the role of the champion? Relative involvement?

2. Quality Coordinator:

Is there a formally appointed TQ coordinator?

- What is the role of the coordinator? Relative involvement?

3. Top Leadership:

Role?
Relative involvement?
Degree of support?

What level of access is provided by top management in support of the quality effort?

Direct _____
Via one or more levels _____

Is consistency and clarity of direction provided by top leadership?

- Has an organizational quality policy been developed?

- How has the policy been communicated?

4. Executive Council:

Has a central quality team (executive council) been formed and if so what is its composition and function.

What is the relative involvement of:

Middle Management (Department Heads)?
Line organizations?
Staff/support organizations?

Front line?

5. Faculty:

What is the role of faculty? Relative involvement?

What is the consensus of the faculty regarding the TQ effort?

6. Customers:

Who are your customers?	Internal	External
faculty	_____	_____
students	_____	_____
community	_____	_____
industry	_____	_____
alumni	_____	_____
vendors/suppliers	_____	_____

- What are their roles/ relative involvement?

7. Education/Training:

Is there an ongoing education/training program?

Has a formalized training plan been developed?

Who has received training?

Top management	_____
Middle management	_____
Line personnel	_____
Staff personnel	_____
Front line personnel	_____
Faculty	_____
Students	_____
Quality coordinator	_____
Quality staff	_____

Who will receive training in the future?

What training methods have been employed?

External schools/courses
Internal schools/courses (external consultant(s) instructing)
Internal schools/courses (internal instructors)
Self study

D. QUALITY ORGANIZATION

Which of the following areas are currently practicing TQ internally?

Administration
Academic

Do you have a quality department or staff?

Number of personnel
Full or part time

Has the organizational structure changed as a result of the quality effort?

No change _____
Minor changes _____
Major changes _____

Was it necessary to add positions into the existing structure?

Have quality circles or teams been established?

- What is the role of the teams?
- What is their composition?

Have any cross functional teams been established?

Is there an established suggestion system?
If so, have the number of suggestions increased?

Has a recognition/reward system been developed to reinforce the quality effort?

Monetary
Non monetary, describe.

E. IMPLEMENTATION

1. Strategy:

Was a formal implementation plan used?

What was the implementation strategy?

How did the TQ effort begin?

What is its history, where did it start?

What was the first application? Was it successful?

Did the organization attempt pilot projects to show initial success?

In what ways did implementation deviate from plans? What was changed from the original plan? Why?

Was quality effort implemented by

External, consultant _____
Internal,
TQ coordinator _____
Champion _____
Team approach _____
Internal _____
External _____
Combination _____

What is the relationship of the TQ effort to strategic planning?

Have the services of an external consultant ever been used?
If so, for what purpose?

Has the organization adopted the methods or tools or procedures advocated by any particular individual? (Related to earlier question regarding philosophy)

Traditional _____
Homegrown _____
Combination _____

2. Resources:

How are financial resources obtained?

Formal- budgeted
Informal- from existing budget

How is the cost of quality computed?

Are records kept on the cost of quality?

How do costs compare to benefits?

3. Difficulties:

What difficulties have been encountered?

Have barriers or resistance has been encountered?

Resistance
Direction/Guidance
Support
Resource constraints

What are the sources of these difficulties?

How have these problems been dealt with?

Are any of these problems unique to education? If so, which ones?

F. SUCCESS

How does the organization measure the success or progress of the total quality effort?

Quantitatively- objective ____
Qualitatively-subjectively ____
Combination ____

What types of measurements are used?

How is customer feedback ained and measured?

Surveys ____
Number of complaints ____
Internal customer reports ____
Meetings with customers ____
Customers are part of quality teams ____

What type of results (improvements) have been achieved? (Have any of the goals of the quality effort as discussed previously been achieved?)

Efficiency ____
Speed/Responsiveness ____
Quality of product ____
Quality of work ____
Image or reputation ____
Customer satisfaction ____
Economic payoff ____

How has implementation progressed?

Fits and starts
Growing and building
Gradual, steady
In phases based on critical events or strategic plans.

Will the organization reach a point where TQ is institutionalized and self sustaining?

Is there a finite point in time where the organization has achieved total quality?

When can the effort be stopped, when are you finished?

Is the (1) quality coordinator, (2) Quality department, a permanent part of the organization or will the organization reach a point where those services are no longer required?

Describe the five most significant improvements that have been achieved.

When implementing total quality, what is unique about education? What are the constraints on total quality in education? How are they different from other organizations?

What advice would you give to an organization embarking on implementation of a TQ effort?

APPENDIX E: COMMON ELEMENTS OF QUALITY

	Phillip Crosby	W.Edwards Deming	Joseph Juran	Karl Albrecht Ron Zemke	Glenn E. Hayes
Clear Mission	X	X	X	X	X
Teamwork	X	X	X	X	X
New Culture	X	X	X	X	X
Customer First	X	X	X	X	X
Define Quality	X	X	X	X	X
Education	X	X	X	X	X
Measurement	X	X	X	X	X
Everyone's Responsibility	X	X	X	X	X

APPENDIX F: EXPERT DEFINITIONS OF QUALITY

1. Philip B. Crosby

   "We must define quality as 'conformance to requirements' if we are to manage it. [Crosby, 1979]

2. Massaaki Imai

   "In it's broadest sense, quality is anything that can be improved." [Imai, 1986]

3. Joseph M. Juran

   "Quality is fitness for use." [Juran, 1989]

4. Kaoru Ishikawa

   "Narrowly interpreted, quality means quality of product. Broadly interpreted, quality means quality of work, quality of service, quality of information, quality of process, quality of division, quality of people, including workers, engineers, managers and executives, quality of system, quality of company, quality of objectives, etc.." [Ishikawa, 1985]

5. Goal/QPC

   "The ability to meet or exceed consumer expectation while maintaining competitive market position." [Goal/QPC, 1991]

6. Armand Fiegenbaum

   "Quality is what the customer perceives" [Fiegenbaum, 1983]

7. W. Edwards Deming

   "Quality can be defined only in terms of the agent. Who is the Judge of quality? What qualities create dissatisfaction in the customers mind? How do you know?" [Deming, 1985]

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